

Integra-X



A Game-changing solution
for WISPs in Italy



CASE STUDY, 2022

INTRODUCTION

Internet Service Providers (ISPs) globally are increasingly challenged to provide high-capacity traffic with high reliability at a low cost to their users. This means that ISPs must carefully choose the right technologies, allowing them to hit all these targets in a single shot.

THE VISION

While fiber optic connectivity has a long deployment time and high rollout costs, the ownership of the telecommunications infrastructure is an appealing requisite that any telco operators try to pursue to offer the best service to their subscribers. Using radio technology for this is very attractive for Internet operators, as most of their founders are radio experts.

Setting up Point-to-Point (PtP) microwave radio equipment does not require long procedures for site acquisition and civil works, thus being in sync with the fast-evolving nature of ISP's networks. In Italy, for geographical, historical, and cultural reasons, inhabitants populate plenty of towns: mostly, small cities in places where National Public Internet service is patchy or unavailable. In these areas, Wireless Internet Service Providers (WISPs) have a very important role in connecting people to the Internet for smart-working, video-streaming, online gaming, live virtual meetings, or surfing the Internet.

THE CHALLENGE

Using PtP microwave radio equipment to build WISPs broadband networks has been limited so far because of two main reasons:

- ✓ Low traffic capacity with PtP radio compared to fiber optics
- ✓ Expensive yearly licenses from the National Regulator

To achieve 2 Gbps capacity by a single channel in cross-polarization (XPIC) mode, an over 100 MHz channel bandwidth is required, and such capacity is generally allowed only for frequency bands higher than 15 GHz. That is typically not suitable for covering long distances for broadband links.





Making it possible to use such high-frequency bands to cover long distances would also solve the latter problem about the National Regulator's yearly fees since such fees typically have a lower cost for higher frequency bands (above 10 GHz) and a higher cost for low-frequency bands (below 10 GHz).

THE SOLUTION

SAF Tehnika designed the Integra-X microwave radios to align with the requirements of having high transmit power in all bands. This is unique in the PtP microwave radio world, making Integra-X a perfect fit for WISPs in Italy.

Integra-X by SAF Tehnika allows very high transmit power in frequency bands such as the 18 GHz band, where wide channels 110-112 MHz are possible, allowing 2.2 Gbps capacity on single-channel XPIC operation. With Tx power ranging from +26 dBm up to +31 dBm, Integra-X 18 GHz achieves long distance with high capacity and with a lower cost of yearly license fee to the National Regulator.

In Italy, the only bands allowing channels as wide as 110-112 MHz are the ones starting from 18 GHz upwards, thus making such bands very attractive to deploy broadband links.

THE CLIENT

Linkwave is one of the first Italian WISPs that deployed Integra-X 18 GHz radios. Using just 90 cm diameter antennas, they created long distance hops up to 35 km, with satisfactory performances.

Linkwave
internet a km zero

Linkwave especially appreciated the responsiveness of SAF Tehnika's customer service and the standard 5-years warranty on radios. Linkwave recently upgraded all their links by adding ATPC functionality via free download of firmware update from saftehnika.com website. The Integra-X technical specs that Linkwave appreciated the most are the polarization indication and the built-in spectrum analyzer on the GUI (Graphic User Interface).



Lorenzo Busatti, the CEO of Linkwave, especially acknowledged such diagnostics' functionality because he had already verified the experience of SAF Tehnika on this field, since he owns a **Spectrum Compact by SAF Tehnika**: his device covers the entire band 18 GHz and is typically used for interference scanning, hunting free channels, and general troubleshooting. With the conic directional antenna integrated within the Spectrum Compact device, it is very mobile and easy to use.



Lorenzo Busatti, the CEO of Linkwave,
with Spectrum Compact

SAF Tehnika is one of the most specialized microwave data transmission technology manufacturers in Europe with long-term competence in the development and production of microwave radios, compact handheld touchscreen spectrum analyzers and radio signal generators, and IoT wireless monitoring ecosystem **Aranet**.



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